

**CALCULATION NEW JERSEY STATE LIBRARY**

Calculate the score for Potential Surface Water Category I: Contaminant Characteristics and enter it on space 53 of the score sheet.

**II. RECEPTORS**

**A. SURFACE WATER CATEGORY**

Select the score which reflects the surface water category of each surface water body that may be impacted by site contamination. Enter the affected surface water bodies and their category on Chart 3.B.4. If more than one surface water body may be impacted, select the surface water category which yields the highest score. Surface water category information is contained in the Surface Water Quality Standards. Enter the score in space 54 of the score sheet.

Category	Score
Non-degradation areas and Pinelands (FW-1)	10
Category One Waters (C1)	5
Category Two (C2)	3

**B. TYPE OF USAGE**

Select the score which reflects the nearest usage of the potentially impacted surface water resource (selected in IIA above). If there is more than one type of usage, select the usage which yields the highest score. This is the point of usage. Information on surface water usage may be available in Departmental and local health department records. Enter the score in space 55 of the score sheet.

Type of Usage	Score
Potable	10
Primary contact recreation (swimming/surfing permitted)	8
Irrigation/livestock watering/food production	5
Secondary contact recreation (boating/fishing permitted)	3
Non-potable commercial/industrial	1

**C. ENVIRONMENTALLY SENSITIVE AREAS**

Select the score which reflects the presence or absence of an environmentally sensitive area within 1/2 mile of any documented soil contamination which may impact surface water (consistent with IIA above). Enter the score in space 56 of the score sheet.

Environmentally sensitive areas	Score
Environmentally sensitive area present	10
Areas not described above	0

**D. OVERLAND DISTANCE**

Select the score which reflects the shortest runoff route from where contaminants have been detected to the probable point of entry to the closest surface water body. This is a down-gradient route and is unlikely to be along a straight line. Elevation contours on USGS topographic maps may be

helpful in determining the runoff route. Enter the score in space 57 of the score sheet.

Overland Distance	Score
≤100 feet	10
>100 feet to 500 feet	8
>500 feet to 1,000 feet	5
>1,000 feet to 1/2 mile	1
> 1/2 mile	0

**CALCULATION**

Calculate the score for Potential Surface Water Contamination Category II: Receptors and enter it on space 58 of the score sheet.

**III. LIKELIHOOD OF IMPACT**

**A. DISTANCE TO POINT OF USAGE**

Select the score which reflects the shortest distance between any point of soil or ground water contamination and the nearest downstream point of usage (selected in IIB and IIC above). To determine the distance, utilize USGS topographic maps and measure the downstream to the nearest point of usage or for one stream mile. If the potentially impacted water body is tidally influenced, measure one mile downstream and upstream as far as the tidal run could be expected to carry the contaminants of concern. If this information is unavailable, include up-stream usages of 0.5 mile and downstream one mile. Enter the score in space 59 of the score sheet.

Distance	Score
≤500 feet	10
>500 feet to 1,000 feet	5
>1,000 feet to 1 mile	3
>1 mile or no known usage or no environmentally sensitive area	0

**B. SURFACE WATER FLOW CHARACTERISTICS**

Select the score which reflects the annual mean flow of the potentially affected surface water body. The most recent edition of "Water Resources Data, New Jersey, Water Year 1992," U.S. Geological Survey, 1993 (see Table 8 of Appendix C) lists the annual mean flow, in cubic feet per second, for specific water bodies. Annual mean flow information for additional water bodies is listed in Water Resources Data, New Jersey, New Jersey Geological Survey (published annually). Apply a default score of 8 if flow information is not available. Enter the score in space 60 of the score sheet.

Annual Mean Flow	Score
≤10 cubic feet per second	10
>10 to 100 cubic feet per second	8
>100 to 1,000 cubic feet per second	5
>1,000 cubic feet per second	1

**C. MIGRATION POTENTIAL**

Select the score which reflects the potential for contamination to reach a surface water body. Enter the score in space 61 of the score sheet.

<u>Migration Potential</u>	<u>Score</u>
A direct physical connection has been documented between the area of contamination and the surface water body	10
Soil or ground water contamination present and no containment at contaminated areas	5
Conditions not as described above	1

**D. HYDRAULIC CONDUCTIVITY**

When the potential surface water contamination is from contaminated ground water, select the score which reflects the hydraulic conductivity of the aquifer or geologic formation on which the area of contamination lies. Determine the hydraulic conductivity by referencing site specific reports, county geologic maps, or state geologic maps. Table 6 in Appendix C lists the hydraulic conductivity for most aquifers and formations in New Jersey. If hydraulic conductivities cannot be determined from Table 6, apply a default score listed below. If more than one aquifer is impacted, select the aquifer which yields the highest conductivity score. If the potential source is not from ground water, enter a 0 for the score for D. Enter the score in space 62 of the score sheet.

<u>Hydraulic Conductivity</u>	<u>Score</u>
>100 ft/day	10
>10 to 100 ft/day	8
>1 to 10 ft/day	5
>0.1 to 1 ft/day	3
≤0.1 ft/day	1

  

<u>Hydraulic Conductivity</u>	<u>Default Score</u>
Limestone/dolomite karst formations	10
Coastal plain aquifers	8
Glacial aquifers	8
Other bedrock formations	5
Coastal plain confining units	1
Glacial confining units	1

**CALCULATION**

Calculate the score for Potential Surface Water Contamination Category III: Likelihood of Impact and enter it on space 63 of the score sheet.

Calculate the score for Section 3, Subsection B: Potential for Surface Water Contamination (I+II+III) and enter in on space 64 of the score sheet.

ALL REFERENCES USED TO COMPLETE THIS SECTION MUST BE FULLY IDENTIFIED IN THE SPACES PROVIDED ON THE SCORE SHEET.

**SECTION 4: SUBSURFACE GAS**

Complete the Subsurface Gas Section when either (1) volatile organic gases exist in the subsurface, or (2) volatile organic free product is present in soil or ground water.

If neither volatile organic subsurface gas, nor volatile organic free product exist at the site, do not complete this section. Either complete additional sections of the manual, which apply to the site being scored, or calculate the draft score on the final page of the score sheet.

**I. CONTAMINANT CHARACTERISTICS**

**A. CONTAMINANT OF CONCERN**

**1. CONTAMINANT OF CONCERN SELECTION**

List in Chart 4.A.1 the volatile organic gases or free product and the corresponding vapor pressure. Select the contaminant which has the highest vapor pressure at standard temperature and pressure. If more than one contaminant has the same vapor pressure, select the contaminant which has the highest Inhalation Toxicity Level as listed in "Reference Concentrations for Inhalation," NJDEPE 1994 (see Table 9 of Appendix C). Enter the contaminant of concern in space 65 of the score sheet.

**2. TOXICITY OF CONTAMINANT OF CONCERN**

Select the score which reflects the toxicity based upon the Inhalation Toxicity Level for the selected contaminant of concern. Inhalation Toxicity Levels for specific contaminants are listed in "Unit Risk Factors for Inhalation," NJDEPE 1994 (see Table 9 of Appendix C). For contaminants which do not have inhalation toxicity level, the Department will develop a level on a case-by-case basis. Enter the inhalation toxicity score in space 66 of the score sheet.

<u>Level</u>	<u>Score</u>
Inhalation Toxicity Level 3	10
Inhalation Toxicity Level 2	5
Inhalation Toxicity Level 1	1

**3. CONTAMINANT CONCENTRATION**

Select the score which reflects the concentration of the contaminant of concern based on field observation of free product, or instrument readings from explosimeter, photoionization detector (PID), and organic vapor analyzer (OVA). Enter the score in space 67 of the score sheet.

<u>Contaminant Concentration</u>	<u>Score</u>
Volatile organic free product present on ground	10
water or in subsurface soil Explosimeter readings of soil gas >10% LEL	10
Explosimeter readings of soil gas 1% to 10% LEL	8
PID readings of soil gas >500 ppm	10
PID readings of soil gas >200 ppm to 500 ppm	8

PID readings of soil gas >50 ppm to 200 ppm	3
PID readings ≤50 ppm	1
OVA readings of soil gas >1000 ppm	10
OVA readings of soil gas >500 ppm to 1000 ppm	8
OVA readings of soil gas >200 ppm to 500 ppm	3
OVA readings of soil gas ≤200 ppm	1

**CALCULATION**

Calculate the score for Subsurface Gas Category I: Contaminant Characteristics and enter it on space 68 of the score sheet.

**II. RECEPTORS**

**A. DISTANCE TO OCCUPIED BUILDING**

Select the score which reflects the shortest distance between point of subsurface gas or free product detection and the nearest occupied building which has a basement. If it is unknown whether or not a building has a basement, score the site under this section as if a basement exists. Enter the score in space 69 of the score sheet.

<u>Distance</u>	<u>Score</u>
&8C100 feet	10
>100 feet to 200 feet	8
>200 feet to 500 feet	3
>500 feet to 1,000 feet	1
>1,000 feet	0

**B. ZONING**

Select the score for the land use zoning at and adjacent to the site. Zoning information can be obtained from local zoning officials. If the zoning in the area of the site includes more than one zoning classification, assign a score based on the classification which yields the highest score. For example, a site which is zoned industrial with adjacent property which is zoned residential would be assigned a score of "10" based on the residential zoning. Enter the score in space 70 of the score sheet.

<u>Zoning</u>	<u>Score</u>
Residential/recreational	10
Commercial	8
Agricultural/rural	3
Industrial	1

**CALCULATION**

Calculate the score for Subsurface Gas Category II: Receptors and enter the score on space 71 of the score sheet.

**III. LIKELIHOOD OF IMPACT**

**A. DEPTH TO AQUIFER OF CONCERN**

Select the score for the depth of the aquifer of concern by measuring the shortest vertical distance from the ground surface to the depth of the saturated zone of the first water

table in the area where free product or volatile organic gas was detected. If there are no on-site data indicating the depth to the aquifer of concern, refer to well logs, soil boring logs, or geologic and soil survey reports for the area where the site is located. Enter the score in space 72 of the score sheet.

<u>Depth</u>	<u>Score</u>
≤10 feet	10
>10 to 20 feet	8
>20 to 50 feet	3
>50 feet	1

**B. SOIL PERMEABILITY**

Select the score which reflects the soil permeability based upon the type of soil for the area where the site is located. If no site specific information is available, determine the type of soil based on soil survey reference information compiled by the U.S. Department of Agriculture, Soil Conservation Service. If there is more than one soil type in the area where the site is located, select the score based on the permeability which yields the highest score. Enter the score in space 73 of the score sheet.

<u>Type of Soil</u>	<u>Score</u>
Highly fractured/cavernous limestone and dolomite (karst topographical regions)	10
Gravel, coarse sand, coarse stratified drift, highly fractured metamorphic and highly vesicular igneous rock (including basalt and diabase), highly fractured shale and sandstone, moderately fractured/cavernous limestone and dolomite	8
Slightly to moderately fractured metamorphic and moderately vesicular igneous rock (including basalt and diabase), slightly to moderately fractured shale and sandstone, slightly fractured limestone and dolomite, man-made conduits	5
Silty sand, sandy clay, sandy loam, fine sand, loamy sand, coarse till, fine to medium stratified drift, silt, silty clay, silty loam, loess, clay loam, moderately permeable till	3
Clay, compact till	1

**CALCULATION**

Calculate the score for Subsurface Gas Category III: Likelihood of Impact and enter it on space 74 of the score sheet.

Calculate the total score for Section 4: Subsurface Gas: (I+II+III) and enter in on space 75 of the score sheet.

ALL REFERENCES USED TO COMPLETE THIS SECTION MUST BE FULLY IDENTIFIED IN THE SPACES PROVIDED ON THE SCORE SHEET.

**REFERENCES**

Allard, B. et al., 1977. Adsorption of Long Lived Radionuclides in Clay and Bedrock. Part 1. Determination of Distribution Coefficients, KBS Technical Report 55.

Long, E.R. et al., 1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management, Vol. 19, No. 1 pp. 81-97.

NJDEPE. 1994. Unit Risk Factors for Inhalation. Air Quality Regulation Program, Bureau of Air Quality Evaluation, Trenton, New Jersey.

NJDEPE. 1994. Reference Concentrations for Inhalation. Air Quality Regulation Program, Bureau of Air Quality Evaluation, Trenton, New Jersey.

Research Triangle Institute, 1992. Preliminary Soil Action Level for Superfund Sites, Draft Interim Report. EPA Contract 68-W1-0021.

Bioaccumulative Chemicals of Concern, USEPA, 40 C.F.R. Parts 9, 122, 123, 131 Final Water Quality Guidance for the Great Lakes System; final rule, March 23, 1995.

USEPA. 1990. Basics of Pump and Treat Ground Water Remediation Technology. EPA-600/8-90/003.

U.S. Geological Survey. 1993. Water Resources Data, New Jersey, Water Year 1992. U.S.G.S. Water Data Report NJ-92-1.

Amended by R.2000 d.381, effective September 18, 2000.

See: 32 N.J.R. 932(a), 32 N.J.R. 3394(b).

Rewrote the appendix.

APPENDIX B  
REMEDIAL PRIORITY SYSTEM SCORE SHEET

GENERAL SITE INFORMATION:

SITE NAME: \_\_\_\_\_

AKA: \_\_\_\_\_

ADDRESS \_\_\_\_\_

MUNICIPALITY: \_\_\_\_\_ COUNTY: \_\_\_\_\_

BLOCK: \_\_\_\_\_ LOT: \_\_\_\_\_

CSL ID NO: N J - - - - -

DRAFT SCORE:  DATE: \_\_\_\_\_

EVALUATOR: \_\_\_\_\_

Date of Remedial Priority System Site Inspection \_\_\_\_\_

INSPECTOR: \_\_\_\_\_

FINAL SCORE:  DATE: \_\_\_\_\_

EVALUATOR: \_\_\_\_\_

COMMENTS:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PLEASE ATTACH ADDITIONAL PAGES AS NECESSARY

SECTION 1: SOIL CONTAMINATION

I. CONTAMINANT CHARACTERISTICS

A. CONTAMINANTS OF CONCERN

1. CONTAMINANTS OF CONCERN SELECTION

CHART 1.A.1

ANALYTICAL CATEGORIES/ CONTAMINANTS	REF. #**	DATA (ppm)**	HEALTH-BASED SOIL RANKING CRITERIA (ppm)	CRITERIA EXCEEDANCE**
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				

\* If more than one reference is used to complete this section footnote each reference in the order that they are used.

\*\* Use "FP" to indicate the presence of free product.

2. CONTAMINANT CONCENTRATION

CHART 1.A.2

CHEMICAL FRACTION	CONTAMINANT	CONCENTRATION (ppm)	RES. DIRECT CONTACT RANKING CRITERIA	CONCENTRATION SCORE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				
<b>TOTAL CONTAMINANT CONCENTRATION SCORE</b>	//////////////// ////////////////	//////////////// ////////////////	//////////////// ////////////////	1. _____

B. CONTAMINANTS OF CONCERN—PETROLEUM HYDROCARBONS

1. CONTAMINANTS OF CONCERN SELECTION

CHART 1.B.1

TYPES OF PETROLEUM/COAL CONTAMINATION

REF. #\*

DATA

ACTION LEVEL

ACTION LEVEL EXCEEDENCE

Light: Gasoline, Coal Tar (Light Oil), Jet Fuel, Kerosine

Medium: Diesel Fuel, Fuel Oil #2, #4, #6, Coal Tar (Anthracene Oil), Crude Oil, Hydraulic Oil, Cutting Oil

Heavy: Asphalts, Coal Tar (Amorphous resin), Lubricating Oil

Used Oil

2. CONTAMINANT CONCENTRATION

CHART 1.B.2

SELECTED PETROLEUM/COAL CONTAMINANT

CONCENTRATION

TOTAL CONCENTRATION SCORE

1 \_\_\_\_\_

SCORE

C. Bioaccumulation Factor \_\_\_\_\_ (contaminant) 2 \_\_\_\_\_

Calculation for Soil Contamination Category I:

Contaminant Characteristics (1 + 2) x equalization multiplier  
(\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_) x 8.33

3 \_\_\_\_\_

References: (include name and date of all reports, sampling episodes, permits, inspections, site visits, departmental actions used to score the site. Include specific reference to page numbers, tables figures, appendices, etc.)

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II. RECEPTORS

SCORE

A. Zoning at or adjacent to the site \_\_\_\_\_ (zoning) 4 \_\_\_\_\_

B. Natural Resources \_\_\_\_\_ (briefly describe environmentally sensitive natural resource) 5 \_\_\_\_\_

Calculation for Soil Contamination Category II: Receptors

(4 + 5) x equalization multiplier

(\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_) x 16.67

II: 6 \_\_\_\_\_

References: \_\_\_\_\_

III. LIKELIHOOD OF IMPACT

SCORE

A. Distance from \_\_\_\_\_ to \_\_\_\_\_ (sample point) (occupied area/environmentally sensitive area) is \_\_\_\_\_ (distance) 7 \_\_\_\_\_

B. Likelihood of access \_\_\_\_\_ (supporting rationale) 8 \_\_\_\_\_

C. Potential for air migration \_\_\_\_\_ (supporting rationale) 9 \_\_\_\_\_

Calculation for Soil Contamination Category III: Likelihood of Impact

(7 + 8 + 9) x equalization multiplier

(\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_) x 11.11

III: 10 \_\_\_\_\_

References: \_\_\_\_\_

CALCULATION FOR SOIL CONTAMINATION:

(3 + 6 + 10)

(\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_)

SCORE: 11 \_\_\_\_\_

Enter the score for Section 1 Soil Contamination on the final page of the score sheet.

SECTION 2: GROUND WATER CONTAMINATION

SUBSECTION A: DOCUMENTED CONTAMINATION

I. CONTAMINANT CHARACTERISTICS

A. CONTAMINANTS OF CONCERN

1. CONTAMINANTS OF CONCERN SELECTION

CHART 2.A.1

ANALYTICAL CATEGORIES/CONTAMINANTS

REF. #\*

DATA (ppb)\*\*

HEALTH-BASED GROUND WATER QUALITY CRITERIA (ppb)

CRITERIA EXCEEDENCE\*\*

VOLATILE ORGANIC

SEMI-VOLATILE ORGANIC

INORGANIC

PESTICIDE/HERBICIDE/PCB

DIOXIN  
RADIONUCLIDE

PETROLEUM/COAL CONTAMINANTS

\* If more than one reference is used to complete this section footnote each reference in the order that they are used.

\*\* Use "FP" to indicate the presence of free product.

2. CONTAMINANT CONCENTRATION

CHART 2.A.2

CHEMICAL FRACTION

CONTAMINANTS

DATA (ppb)\*\*

GROUND WATER QUALITY CRITERIA (ppb)

CONCENTRATION SCORE

VOLATILE ORGANIC  
SEMI-VOLATILE ORGANIC  
INORGANIC  
PESTICIDE/HERBICIDE/PCB  
DIOXIN  
RADIONUCLIDE  
PETROLEUM/COAL CONTAMINANTS

TOTAL CONTAMINANT CONCENTRATION SCORE

|||||

|||||

|||||

12 \_\_\_\_\_

\*\* Use "FP" to indicate the presence of free product.

B. Contaminant mobility  
CHART 2.A.3

CHEMICAL FRACTION	CONTAMINANTS	SOLUBILITY SCORE	DISTRIBUTION COEFFICIENT SCORE	MOBILITY SCORE
VOLATILE ORGANIC			////////////////////////////////////	////////////////////////////////////
SEMI-VOLATILE ORGANIC			////////////////////////////////////	////////////////////////////////////
PESTICIDE/HERBICIDE/PCB			////////////////////////////////////	////////////////////////////////////
DIOXIN				////////////////////////////////////
INORGANIC			////////////////////////////////////	////////////////////////////////////
RADIONUCLIDE				////////////////////////////////////
PETROLEUM/COAL CONTAMINANTS		////////////////////////////////////	////////////////////////////////////	
				13 _____

Calculation for Ground Water Contamination Category I:  
 Contaminant Characteristics = (12 + 13) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) x 8.33 I: 14 \_\_\_\_\_

References: (include name and date of all reports, sampling episodes, permits, inspections, site visits, departmental actions used to score the site).  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

II. RECEPTORS		SCORE
CHART 2.A.4		
AQUIFER	CLASSIFICATION	
A. Ground water classification _____		15 _____
B. Type of usage _____ (specifically identify)		16 _____
C. Environmentally sensitive areas _____ (briefly describe environmentally sensitive area)		17 _____

Calculation for Ground Water Contamination Category II:  
 RECEPTORS = (15 + 16 + 17) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) x 11.11 II: 18 \_\_\_\_\_

References: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

III. LIKELIHOOD OF IMPACT

SCORE

A. Distance between \_\_\_\_\_ and \_\_\_\_\_  
 (point of gw. cont.) (usage/environmentally sensitive area)  
 Is \_\_\_\_\_  
 (distance) 19 \_\_\_\_\_

B. Hydraulic conductivity \_\_\_\_\_  
 (aquifer and hydraulic conductivity) 20 \_\_\_\_\_

Calculate the score for Category III: Likelihood of Impact  
 ( 19 + 20 ) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ ) x 16.67 III: 21 \_\_\_\_\_

References: \_\_\_\_\_

Calculation for Ground Water—Documented Contamination:  
 (14 + 18 + 21)  
 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

Section 2 Score 22 \_\_\_\_\_

Enter the score for Documented Ground Water Contamination on the final page of the score sheet.

SECTION 2: GROUND WATER CONTAMINATION

SUBSECTION B: POTENTIAL GROUND WATER CONTAMINATION

I. CONTAMINANT CHARACTERISTICS

A. CONTAMINANTS OF CONCERN

I. CONTAMINANTS OF CONCERN

CHART 2.B.1

ANALYTICAL CATEGORIES/ CONTAMINANTS	REF. #**	DATA (ppm)**	IMPACT TO GROUND WATER SOIL RANKING CRITERIA (ppm)	CRITERIA EXCEEDENCE**
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				
PETROLEUM/COAL CONTAMINANTS				

\* If more than one reference is used to complete this section footnote each reference in the order that they are used..

\*\* Use "FP" to indicate the presence of free product.

2. CONTAMINANT CONCENTRATION

CHART 2.B.2

CHEMICAL FRACTION	CONTAMINANT	CONCENTRATION (ppm)**	RESIDENTIAL DIRECT CONTACT SOIL CRITERIA OR SURFACE WATER QUALITY STANDARD	CONCENTRATION SCORE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				
PETROLEUM/COAL CONTAMINANTS				
TOTAL CONTAMINANT CONCENTRATION SCORE				23 _____

\*\* Use "FP" to indicate the presence of free product.

B. Contaminant mobility

CHART 2.B.3

CHEMICAL FRACTION	CONTAMINANT	SOLUBILITY	DISTRIBUTION COEFFICIENT	MOBILITY SCORE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
INORGANIC				
RADIONUCLIDE				
PETROLEUM/COAL CONTAMINANTS				
				24 _____

Calculation for Potential Ground Water Contamination Category I: Contaminant

Characteristics = (23 + 24) x equalization multiplier  
 (\_\_\_\_ + \_\_\_\_\_) x 5.56

I: 25 \_\_\_\_\_

References: (include name and date of all reports, sampling episodes, permits, inspections, site visits, departmental actions used to score the site).

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II. RECEPTORS

CHART 2.B.4

AQUIFER	CLASSIFICATION

- A. Ground water classification \_\_\_\_\_ (classification) 26 \_\_\_\_\_
- B. Type of usage \_\_\_\_\_ (specifically identify) 27 \_\_\_\_\_
- C. Environmentally sensitive areas \_\_\_\_\_ (briefly describe environmentally sensitive area) 28 \_\_\_\_\_

Calculation for Potential Ground Water Contamination Category II:

Receptors = (26 + 27 + 28) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) x 5.55 II: 29 \_\_\_\_\_

References: \_\_\_\_\_

III. LIKELIHOOD OF IMPACT

SCORE

- A. Distance between \_\_\_\_\_ and \_\_\_\_\_ (point of GW cont.) (usage/environmentally sensitive area) Is \_\_\_\_\_ (distance) 30 \_\_\_\_\_
- B. Hydraulic conductivity \_\_\_\_\_ (aquifer/geologic formation hydraulic conductivity) 31 \_\_\_\_\_
- C. Depth to aquifer of concern \_\_\_\_\_ (depth) 32 \_\_\_\_\_

Calculation for Potential Ground Water Contamination Category III:

Likelihood of Impact = (30 + 31 + 32) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) x 5.56 III: 33 \_\_\_\_\_

TOTAL CALCULATION FOR GROUND WATER—POTENTIAL CONTAMINATION:

(25 + 29 + 33)  
 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ SECTION 2 SCORE 34 \_\_\_\_\_

Enter the score for Potential Ground Water Contamination on Page 22 of the score sheet.

SECTION 3: SURFACE WATER AND SEDIMENT CONTAMINATION

SUBSECTION A: DOCUMENTED SURFACE WATER CONTAMINATION

I. CONTAMINANT CHARACTERISTICS

A. CONTAMINANTS OF CONCERN FOR SURFACE WATER

1. CONTAMINANTS OF CONCERN SELECTION

CHART 3.A.1

ANALYTICAL CATEGORIES/  
CONTAMINANTS

REF. #\*

DATA  
(ppb)\*\*

HEALTH/AQUATIC  
BASED SWQS (ppb)

CRITERIA  
EXCEEDENCE\*\*

SEMI-VOLATILE ORGANIC

INORGANIC

PESTICIDE/HERBICIDE/PCB

DIOXIN

RADIONUCLIDE

\* If more than one reference is used to complete this section footnote each reference in the order that they are used.

\*\* Use "FP" to indicate the presence of free product.

2. CONTAMINANT CONCENTRATION

CHART 3.A.2

CHEMICAL FRACTION	CONTAMINANT	CONCENTRATION	SWQS (ppb)	CONCENTRATION SCORE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				
TOTAL CONTAMINANT CONCENTRATION SCORE				35 _____

A 3. Bioaccumulation \_\_\_\_\_  
(contaminant)

36 \_\_\_\_\_

Calculation for Factor A: Contaminant Characteristics Surface Water =  
( 35 + 36)

Dolomite \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

A: 37 \_\_\_\_\_

B. CONTAMINANTS OF CONCERN—SEDIMENT

1. CONTAMINANT OF CONCERN SELECTION—SEDIMENT

CHART 3.A.3

ANALYTICAL CATEGORIES/ CONTAMINANTS	REF. #*	DATA (ppb)	SEDIMENT SCREENING GUIDELINES (ppb)	GUIDELINE EXCEEDENCE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				

\* If more than one reference is used to complete this section footnote each reference in the order that they are used.

CHART 3.A.4

CHEMICAL FRACTION	CONTAMINANT	CONCENTRATION	VALUES (ppm)	CONCENTRATION SCORE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				
PETROLEUM/COAL CONTAMINANTS				
TOTAL CONTAMINANT CONCENTRATION SCORE	////////////////////////////////////	////////////////////////////////////	////////////////////////////////////	38 _____

SCORE

B 3. Bioaccumulation \_\_\_\_\_  
(contaminant)

39 \_\_\_\_\_

Calculation for Factor B: Contaminant Concentration Sediment =  
(38 + 39)  
\_\_\_\_\_ + \_\_\_\_\_

B: 40 \_\_\_\_\_

References: (include name and date of all reports, sampling episodes, permits, inspections, site visits, departmental actions used to score the site).

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Calculation for Surface Water Contamination Category I:  
Contaminant Characteristics =  
(37 + 40) x equalization factor  
(\_\_\_\_\_ + \_\_\_\_\_) x 4.16

I: 41 \_\_\_\_\_

II. RECEPTORS

SCORE

CHART 3.A.5

SURFACE WATER BODY	CATEGORY

- A. Surface water category \_\_\_\_\_ (category) 42 \_\_\_\_\_
- B. Type of usage \_\_\_\_\_ (specify) 43 \_\_\_\_\_
- C. Environmentally sensitive areas \_\_\_\_\_ (describe environmentally sensitive area) 44 \_\_\_\_\_

Calculation for Surface Water Contamination Category II:  
 Receptors = (42 + 43 + 44) x equalization multiplier  
 (\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_) x 11.11 II: 45 \_\_\_\_\_

References: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

III. LIKELIHOOD OF IMPACT

- A. Distance from \_\_\_\_\_ and \_\_\_\_\_ (sw collection point) (usage/environmentally sensitive area) is \_\_\_\_\_ (distance) 46 \_\_\_\_\_
- B. Surface water flow characteristics \_\_\_\_\_ (surface water body/flow rate) 47 \_\_\_\_\_

Calculation for Documented Surface Water Contamination Category III:  
 Likelihood of Impact = (46 + 47) x equalization multiplier  
 (\_\_\_\_\_ + \_\_\_\_\_) x 16.67 III: 48 \_\_\_\_\_

References: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

CALCULATION FOR SURFACE WATER DOCUMENTED CONTAMINATION:  
 41 + 45 + 48  
 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ SECTION 3 SCORE 49 \_\_\_\_\_

Enter the score for Section 3. Documented Surface Water Contamination on the final page of the score sheet.

SECTION 3: SURFACE WATER AND SEDIMENT CONTAMINATION  
 SUBSECTION B—POTENTIAL SURFACE WATER CONTAMINATION

I. CONTAMINANT CHARACTERISTICS

A. CONTAMINANTS OF CONCERN

1. SELECTION OF CONTAMINANTS OF CONCERN

CHART 3.B.1

ANALYTICAL CATEGORIES/ CONTAMINANTS	REF. #*	DATA (ppm/ppb)**	STANDARD/ CRITERIA	CRITERIA EXCEEDENCE**
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				

\* If more than one reference is used to complete this section footnote each reference in the order that they are used.

\*\* Use "FP" to indicate the presence of free product.

2. CONTAMINANT CONCENTRATION

CHART 3.B.2

CHEMICAL FRACTION	CONTAMINANT	DATA (ppm/ppb)	RES. DIRECT CONTACT SOIL RANKING CRITERIA (ppb)	CONCENTRATION SCORE
VOLATILE ORGANIC				
SEMI-VOLATILE ORGANIC				
INORGANIC				
PESTICIDE/HERBICIDE/PCB				
DIOXIN				
RADIONUCLIDE				
PETROLEUM/COAL CONTAMINANTS				
TOTAL CONTAMINANT CONCENTRATION SCORE	////////////////////////////////////	////////////////////////////////////	////////////////////////////////////	50 _____

B. CONTAMINANT MOBILITY

CHART 3.B.3:

CHEMICAL FRACTION	CONTAMINANT	SOLUBILITY SCORE	DISTRIBUTION COEFFICIENT SCORE	MOBILITY SCORE
VOLATILE ORGANIC			////////////////////////////////////	////////////////////////////////////
SEMI-VOLATILE ORGANIC			////////////////////////////////////	////////////////////////////////////
PESTICIDE/HERBICIDE/PCB			////////////////////////////////////	////////////////////////////////////
DIOXIN			////////////////////////////////////	////////////////////////////////////
INORGANIC		////////////////////////////////////		////////////////////////////////////
RADIONUCLIDE		////////////////////////////////////		////////////////////////////////////
PETROLEUM/COAL CONTAMINANTS		////////////////////////////////////	////////////////////////////////////	

C. Bioaccumulation factor \_\_\_\_\_ (contaminant) 51 \_\_\_\_\_  
52 \_\_\_\_\_

Calculation for Potential Surface Water Contamination Category I:  
Contaminant Characteristics = (50 + 51 + 52) x equalization multiplier  
( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ )

I: 53 \_\_\_\_\_

References: (include name and date of all reports, sampling episodes, permits, inspections, site visits, departmental actions used to score the site).

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II. RECEPTORS

CHART 3.B.4

SURFACE WATER BODY	CATEGORY

- A. Surface Water Category \_\_\_\_\_  
(category) 54 \_\_\_\_\_
- B. Type of usage \_\_\_\_\_  
(type of usage) 55 \_\_\_\_\_
- C. Environmentally sensitive area \_\_\_\_\_  
(describe environmentally sensitive area) 56 \_\_\_\_\_
- D. Overland distance from \_\_\_\_\_ to \_\_\_\_\_  
(point of detection) (point of entry)  
Is \_\_\_\_\_  
(distance) 57 \_\_\_\_\_

Calculation for Potential Surface Water Contamination Category II:

Receptors = (54 + 55 + 56 + 57) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) x 4.17 II: 58 \_\_\_\_\_

References: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

III. LIKELIHOOD FOR IMPACT

- A. Distance from \_\_\_\_\_ to \_\_\_\_\_  
(point of detection) (usage/environmentally sensitive area)  
Is \_\_\_\_\_  
(distance) 59 \_\_\_\_\_
- B. Surface water flow characteristics \_\_\_\_\_  
(surface water body/flow rate) 60 \_\_\_\_\_
- C. Migration potential 61 \_\_\_\_\_
- D. Hydraulic conductivity \_\_\_\_\_  
(aquifer/hydraulic conductivity/geologic formation) 62 \_\_\_\_\_

Calculation for Potential Surface Water Contamination Category III:

Likelihood of Impact = (59 + 60 + 61 + 62) x equalization multiplier  
 ( \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ ) x 4.17 III: 63 \_\_\_\_\_

References: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

CALCULATION FOR SURFACE WATER—POTENTIAL CONTAMINATION:

53 + 58 + 63  
 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = Section 3 Score 64 \_\_\_\_\_

Enter the score for Surface Water Contamination on the final page of the score sheet.

SECTION 4: SUBSURFACE GAS

I: CONTAMINANT CHARACTERISTICS

A. CONTAMINANTS OF CONCERN

1. SELECTION OF CONTAMINANTS OF CONCERN

CHART 1

ANALYTICAL CATEGORIES/  
CONTAMINANTS

VAPOR PRESSURE

VOLATILE ORGANIC

Contaminant of concern 65. \_\_\_\_\_

B. Toxicity \_\_\_\_\_ 66 \_\_\_\_\_  
(toxicity)

C. Contaminant concentration \_\_\_\_\_ 67 \_\_\_\_\_  
(instrument & reading)

Calculation for Subsurface Gas Category I: Contaminant Characteristics =  
(66 + 67) x equalization multiplier  
(\_\_\_\_\_ + \_\_\_\_\_) x 16.67

I: 68 \_\_\_\_\_

References: (include the name and date of all reports, sampling episodes, inspections, site visits, permits utilized to score the site).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

II: RECEPTORS

SCORE

A. Distance from \_\_\_\_\_ to \_\_\_\_\_  
(point of detection) (occupied building)  
is \_\_\_\_\_  
(distance) 69 \_\_\_\_\_

B. Zoning \_\_\_\_\_ 70 \_\_\_\_\_

Calculation for Subsurface Gas Category II: Receptors =  
(69 + 70) x equalization multiplier  
(\_\_\_\_\_ + \_\_\_\_\_) x 16.67

II: 71 \_\_\_\_\_

References: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

III: LIKELIHOOD OF IMPACT

SCORE

A. Depth to aquifer of concern \_\_\_\_\_ & \_\_\_\_\_ 72 \_\_\_\_\_  
(aquifer) (depth)

B. Soil Permeability \_\_\_\_\_ 73 \_\_\_\_\_  
(type of soil)

Calculation for Subsurface Gas Category III: Likelihood of Impact =  
(72 + 73) x equalization multiplier  
(\_\_\_\_\_ + \_\_\_\_\_) x 16.67

III: 74 \_\_\_\_\_

References: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CALCULATION FOR SECTION 4: SUBSURFACE GAS

53 + 58 + 63 = \_\_\_\_\_ 75 \_\_\_\_\_

Enter the score for Section 4. Subsurface Gas on the final page of the score sheet.

## FINAL CALCULATION SHEET FOR THE REMEDIAL PRIORITY SYSTEM SCORE

SECTION	SECTION SCORE
SECTION 1: SOIL CONTAMINATION	
SECTION 2: GROUND WATER	
SECTION 3: SURFACE WATER AND SEDIMENT	
SECTION 4: SUBSURFACE GAS	

Place the section score from Chart 1 above in the equation below and calculate the total score for the site.

## EQUATION FOR CALCULATING TOTAL SCORE:

$$\frac{\text{Section 1} + \text{Section 2} + \text{Section 3} + \text{Section 4}}{4} = \underline{\underline{\text{TOTAL SCORE}}}$$

SCORE: \_\_\_\_\_

DATE \_\_\_\_\_

Amended by R.2000 d.381, effective September 18, 2000.  
See: 32 N.J.R. 932(a), 32 N.J.R. 3394(b).  
Rewrote the appendix.

## APPENDIX C

## REMEDIAL PRIORITY SYSTEM REQUIREMENTS

The Remedial Priority System Requirements are to be used in conjunction with the Remedial Priority System Manual. This reference is a compilation of information which is required to complete a Remedial Priority System score.

TABLE 1-A  
SOIL CRITERIA (mg/kg)

Chemical Name	CAS No.	Residential Direct Contact Soil Ranking Criteria	Health-Based Soil Ranking Criteria	Impact to Ground water Soil Ranking Criteria
Acenaphthene	83-32-9	3400	3400	100
Acetone	67-64-1	1000	1000	100
Acrylonitrile	107-13-1	1	1	1
Aldrin	309-00-2	0.04	0.04	50
Anthracene	120-12-7	10000. <sup>1</sup>	-	100
Antimony	7440-36-0	14	14	-
Arsenic	7440-38-2	20	0.4	-
Barium	7440-39-3	700	700	-
Benzene	71-43-2	3	3	1
Benzo(a)anthracene	56-55-3	0.9	0.9	500
Benzo(a)pyrene	50-32-8	0.66	0.09	100
Benzo(b)fluoranthene	205-99-2	0.9	0.9	50
Benzo(k)fluoranthene	207-08-9	0.9	0.9	500
Benzyl Alcohol	100-51-6	10000. <sup>1</sup>	-	50
Beryllium	7440-41-7	2	0.2	-
BHC (gamma)(Lindane)	58-89-9	0.52	0.52	50
Bis(2-chloroethyl) ether	111-44-4	0.66	0.62	10
Bis(2-chloroisopropyl) ether	108-60-1	2300	2300	10
Bis(2-ethylhexyl) phthalate	117-81-7	49	49	100
Bromodichloromethane	75-27-4	11	11	1
Bromoform	75-25-2	86	86	1
Bromomethane	74-83-9	79	79	1
2-Butanone (MEK)	78-93-3	1000	1000	50
Butylbenzyl phthalate	85-68-7	1100	1100	100
Cadmium	7440-43-9	39	39	-
Carbon tetrachloride	56-23-5	2	2	1
4-Chloroaniline	106-47-8	230	230	-
Chlorobenzene	108-90-7	37	37	1
Chloroform	67-66-3	19	19	1
p-Chloro-m-cresol	59-50-7	10000 <sup>1</sup>	-	100
Chloromethane	74-87-3	520	520	10
2-Chlorophenol	95-57-8	280	280	10
Chromium—hexavalent (VI)	18540-29-9	20	20	-
Chromium—trivalent (III)	16065-83-1	120,000	120,000	-
Chrysene	218-01-9	9	9	500
Copper	7440-50-8	600	600	-
Cyanide	57-12-5	1100	1100	-
4,4'-DDD	72-54-8	3	3	50
4,4'-DDE	72-55-9	2	2	50
4,4'-DDT	50-29-3	2	2	500
Dibenz(a,h)anthracene	53-70-3	0.66	0.09	100
Dibromochloromethane	124-48-1	110	110	1
1,2-Dichlorobenzene	95-50-1	5100	5100	50
1,3-Dichlorobenzene	541-73-1	5100	5100	100
1,4-Dichlorobenzene	106-46-7	570	570	100
3,3'-Dichlorobenzidine	91-94-1	2	2	100
1,1-Dichloroethane	75-34-3	570	570	10
1,2-Dichloroethane	107-06-2	6	6	1
1,1-Dichloroethene	75-35-4	8	8	10
1,2-Dichloroethene (cis)	540-59-5	79	79	1
1,2-Dichloroethene (trans)	540-60-2	1000	1000	50
2,4-Dichlorophenol	120-83-2	170	170	10
1,2-Dichloropropane	78-87-5	10	10	-
1,3-Dichloropropene (cis and trans)	542-75-6	4	4	1
Dieldrin	60-57-1	0.042	0.042	50
Diethyl phthalate	84-66-2	10000. <sup>1</sup>	-	50
2,4-Dimethyl phenol	105-67-9	1100	1100	10
Dimethyl phthalate	131-11-3	10000. <sup>1</sup>	-	50

Chemical Name	CAS No.	Residential Direct Contact Soil Ranking Criteria	Health-Based Soil Ranking Criteria	Impact to Ground water Soil Ranking Criteria
Di-n-butyl phthalate	84-74-2	5700	5700	100
Di-n-octyl phthalate	117-84-0	1100	1100	100
2,4-Dinitrophenol	51-28-5	110	110	10
Dinitrotoluene (2,4-/2,6- mixture)	25321-14-6	1	1	10
Endosulfan	115-29-7	340	340	50
Endrin	72-20-8	17	17	50
Ethylbenzene	100-41-4	1000	1000	100
Fluoranthene	206-44-0	2300	2300	100
Fluorene	86-73-7	2300	2300	100
Heptachlor	76-44-8	0.15	0.15	50
Hexachlorobenzene	118-74-1	0.66	0.42	100
Hexachlorobutadiene	87-68-3	1	1	100
Hexachlorocyclopentadiene	77-47-4	400	400	100
Hexachloroethane	67-72-1	6	6	100
Indeno(1,2,3-cd)pyrene	193-39-5	0.9	0.9	500
Isophorone	78-59-1	1100	1100	50
Lead	7439-92-1	400	400	-
Mercury	7439-97-6	14	14	-
2-Methylphenol	95-48-7	2800	2800	-
4-Methylphenol	106-44-5	2800	2800	-
Methoxychlor	72-43-5	280	280	50
4-Methyl-2-pentanone(MIBK)	108-10-1	1000	1000	50
Methylene chloride	75-09-2	49	49	1
Naphthalene	91-20-3	230	230	100
Nickel	7440-02-0	250	250	-
Nitrobenzene	98-95-3	28	28	10
N-Nitrosodiphenylamine	86-30-6	140	140	100
N-Nitrosodi-n-propylamine	621-64-7	0.66	0.10	10
PCB (Polychlorinated biphenyl)	1336-36-3	0.49	0.49	50
Pentachlorophenol	87-86-5	6	6	100
Phenol	108-95-2	10000 <sup>1</sup>	—	50
Pyrene	129-00-0	1700	1700	100
Selenium	7782-49-2	63	63	-
Silver	7440-22-4	110	110	-
Styrene	100-42-5	23	23	100
1,1,1,2-Tetrachloroethane	630-20-6	170	170	1
1,1,2,2-Tetrachloroethane	79-34-5	34	34	1
Tetrachloroethene	127-18-4	4	4	1
Thallium	7440-28-0	2	0	-
Toluene	108-88-3	1000	1000	500
Toxaphene	8001-35-2	0.10	0.10	50
1,2,4-Trichlorobenzene	120-82-1	68	68	100
1,1,1-Trichloroethane	71-53-6	210	210	50
1,1,2-Trichloroethane	79-00-5	22	22	1
Trichloroethene	79-01-6	23	23	1
2,4,5-Trichlorophenol	95-95-4	5600	5600	50
2,4,6-Trichlorophenol	88-06-2	62	62	10
Vanadium	7440-62-2	370	370	-
Vinyl chloride	75-01-4	2	2	10
Xylenes (Mixed)	1330-29-7	410	410	67
Zinc	7440-66-6	1500	1500	—

<sup>1</sup> Health based criterion exceeds the 10,000 mg/kg maximum for total organic contaminants  
Reference: NJDEP, 1996. Guidance Document for the Remediation of Contaminated Soils.

TABLE 1-B

Petroleum/Coal Contaminants	Total Petroleum Hydrocarbons	Potential Impact to Ground Water
Coal Tar (Amorphous Resin)	100	10,000
Coal Tar (Anthracene Oil)	100	10,000
Coal Tar (Light Oil)	100	1,000

<u>Petroleum/Coal Contaminants</u>	<u>Total Petroleum Hydrocarbons</u>	<u>Potential Impact to Ground Water</u>
Crude Oil	100	10,000
Cutting Oil	100	10,000
Diesel Fuel, Fuel Oil #2	1000	10,000
Fuel Oil #4, #6	100	10,000
Gasoline	100	1,000
Hydraulic Oil	100	10,000
Jet Fuel	100	1,000
Kerosene	100	1,000
Lubricating Oil	100	10,000
Used Oil	1	10,000

Reference: NJDEP Technical Requirements for Site Remediation, N.J.A.C. 7:26E-2.

TABLE 2  
 ADDITIONAL REQUIREMENTS FOR CONTAMINANT OF CONCERN SELECTION

The requirements outlined below are applicable to the evaluation of all analytical data used to score contaminated sites pursuant to N.J.A.C. 7:26F.

I. Combining Data Sets

The scorer gathers all available analytical data prior to scoring a site. Data for a site may represent several sampling events or different analytical methods. Varied analytical data may be considered together for the purpose of scoring a site if the methods used to analyze samples are comparable in terms of the types of analyses conducted and the quality assurance and quality control (QA/QC) procedures followed, or if contaminant concentrations are similar between sampling periods. If concentrations of contaminants change significantly between sampling periods, only the most recent available data will be applied in the scoring process. Older data is typically retained in the case file for informational purposes.

II. Contaminant Concentration Selection

To determine the appropriate sample concentration to apply in scoring from more than one sample, select the maximum concentration from the detected analytes within all analyzed analytical categories. The arithmetic mean, geometric mean or upper confidence limit is not appropriate for scoring purposes.

III. Evaluation of Contaminant Concentrations in Blank Samples

Evaluate analytical samples from the site relative to contaminant concentrations in laboratory method blank, field and trip blank samples (if available). Criteria for comparison differ based upon whether or not the analytes present are common laboratory contaminants. The evaluation of blank samples is conducted as follows:

A. Common Laboratory Contaminants

1. An analyte that is a common laboratory contaminant (e.g., acetone, methylene chloride, 2-butanone, phthalates) is negated if:

- (a) The concentration of the laboratory contaminant in the blank sample exceeds 3 times the Contract Required Quantitation Limits (CRQL) as determined by the U.S.EPA-CLP program; or
- (b) The concentration in the blank sample is acceptable, but the sample concentration is less than 3 times the blank value.

2. An analyte that is a common laboratory contaminant is accepted for scoring purposes if:

The concentration in the site sample exceeds the concentration in the blank sample by at least 3 times and the concentration in the blank is acceptable.

B. Uncommon Laboratory Contaminants

1. An analyte that is an uncommon laboratory contaminant is negated if:

- (a) Concentrations of contaminants in the blank sample exceeds the CRQL; or

(b) The concentration in the blank sample is acceptable, but the concentration in the site sample is less than 3 times the concentration in the blank sample.

2. An analyte that is an uncommon laboratory contaminant accepted for scoring purposes if:

The concentration in the blank sample is less than the CRQL, and the concentration in the sample is 3 times the blank concentration.

#### IV. Exclusion of Artifacts

Chemicals that are detected infrequently at a site may be artifacts in the data due to sampling, analytical or other problems and may not relate to site conditions. An analyte is considered an artifact and is generally not used for scoring purposes if:

1. The analyte is detected infrequently in one environmental media (e.g., 5 percent or less, 1 detect in 20 samples) and not detected at atypically elevated concentrations;
2. The analyte is not detected in other media; or
3. There is no reason to believe the chemical is present, based upon available site history.

#### V. Evaluation of Validated Data

Analytical data may be accompanied by various data qualifiers from the laboratory conducting the analyses or persons performing the data validation. These qualifiers pertain to QA/QC problems and generally indicate uncertainty regarding chemical identity, chemical concentration or both. If available, all qualifiers must be addressed before data can be used for scoring. Data with qualifiers that indicate uncertainties in concentration but not in identification may be used for scoring. Data accompanied by the "R" qualifier, which indicates uncertainties in contaminant identification, can not be used for scoring purposes.

#### References:

1. USEPA, 1989. Risk Assessment Guidance for Superfund, Volume II, Human Health Evaluation Manual (EPA/540/1-89/001).
2. USEPA, 1999. Contract Laboratory Program May 1999 SOW for Organics Analysis-OLM04.2
3. USEPA, 1999. Contract Laboratory Program May 1999 SOW for Inorganics Analysis-ILM04.0

TABLE 3  
BIOACCUMULATIVE CHEMICALS OF CONCERN

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Chemical Name</u>	<u>CAS No.</u>
BHC (gamma)(Lindane)	58-89-9	delta-Hexachlorocyclohexane (delta-BHC)	319-86-8
Chlordane	57-74-9	Mercury	7439-97-6
4,4'-DDD (p,p'-DDD)	72-54-8	Mirex (Dechlorane)	2385-85-5
4,4'-DDE (p,p'-DDE)	72-55-9	Octachlorostyrene	29082-74-4
4,4'-DDT (p,p'-DDT)	50-29-3	PCB (Polychlorinated biphenyls)	1336-36-3
Dieldrin	60-57-1	Pentachlorobenzene	608-93-5
Hexachlorobenzene	118-74-1	Photomirex	39801-14-4
Hexachlorobutadiene	87-68-3	4,4'-TDE (p,p'-TDE)	—
Hexachlorocyclohexane (HCH)	608-73-1	1,2,3,4-Tetrachlorobenzene	634-66-2
alpha-Hexachlorocyclohexane (alpha-BHC)	319-84-6	1,2,4,5-Tetrachlorobenzene	95-94-3
beta-Hexachlorocyclohexane (beta-BHC)	319-85-7	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
		Toxaphene	8001-35-2

Reference: USEPA, March 23, 1995. Bioaccumulative Chemicals of Concern as listed by EPA in Table 6A, 40 CFR Parts 9, 122, 123, 131 and 132 Final Water Quality Guidance for the Great Lakes System; Final Rule.

TABLE 4  
WATER SOLUBILITY VALUES (mg/l)

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Solubility</u>	<u>Chemical Name</u>	<u>CAS No.</u>	<u>Solubility</u>
Acenaphthene	83-32-9	3.42E+00	Acrolein	107-02-8	2.08E+05
Acenaphthylene	208-96-8	3.93E+00	Acrylonitrile	107-13-1	7.94E+04
Acetone	67-64-1	infinite	Aldrin	309-00-2	1.08E-01

Chemical Name	CAS No.	Solubility	Chemical Name	CAS No.	Solubility
Anthracene	120-12-7	4.50E-02	1,2-Diphenylhydrazine	122-66-7	1.84E+03
Benzene	71-43-2	1.75E+03	alpha-Endosulfan	115-29-7	1.60E-01
Benzidine	92-87-5	4.00E+02	beta-Endosulfan	115-29-7	7.00E-02
Benzo(a)anthracene	56-55-3	5.70E-03	Endosulfan sulfate	1031-07-0	1.60E-01
Benzo(a)pyrene	50-32-8	1.20E-03	Endrin	72-20-8	2.40E-02
Benzo(b)fluoranthene	205-99-2	1.40E-02	Ethylbenzene	100-41-4	1.52E+02
Benzo(ghi)perylene	191-24-2	7.00E-04	Fluoranthene	206-44-0	2.06E-01
Benzo(k)fluoranthene	207-08-9	4.30E-03	Fluorene	86-73-7	1.69E+00
Benzoic acid	65-85-0	2.70E+03	Heptachlor	76-44-8	1.80E-01
Benzyl alcohol	100-51-6	8.00E+02	Heptachlor epoxide	1024-57-3	3.50E-01
BHC (alpha)	319-84-6	1.63E+00	Hexachlorobenzene	118-74-1	6.00E-03
BHC (beta)	319-85-7	2.40E-01	Hexachlorobutadiene	87-68-3	1.50E-01
BHC (delta)	319-86-8	3.14E+01	Hexachlorocyclopentadiene	77-47-4	2.10E+00
BHC (gamma) (Lindane)	58-89-9	7.80E+00	Hexachloroethane	67-72-1	5.00E+01
Bis(2-chloroethoxy)methane	111-91-1	8.10E+04	2-Hexanone (Methyl butyl ketone)	591-78-6	1.40E+04
Bis(2-chloroethyl)ether	111-44-4	1.02E+04	Indeno(1,2,3-cd)pyrene	193-99-5	5.30E-04
Bis(2-chloroisopropyl)ether	108-60-1	1.70E+03	Methoxychlor	72-43-5	3.00E-03
Bis(2-ethylhexyl)phthalate	117-81-7	2.85E-01	Methylene Chloride	75-09-2	2.00E+04
Bromodichloromethane	75-27-4	4.40E+03	4-Methyl-2-pentanone	108-10-1	1.70E+04
Bromomethane	74-83-9	1.30E+04	2-Methylnaphthalene	91-57-6	2.54E+01
2-Butanone (Methyl ethyl ketone)	78-93-3	2.68E+05	Methyl Tertiary Butyl Ether	1634-04-4	4.8E+04
Butylbenzyl phthalate	85-68-7	4.22E+01	Napthalene	91-20-3	3.17E+01
Carbon Disulfide	75-15-0	2.94E+03	2-Nitroaniline	88-74-4	1.47E+04
Carbon Tetrachloride	56-23-5	7.57E+02	3-Nitroaniline	99-09-2	8.90E+02
Chlordane	57-74-9	5.60E-01	4-Nitroaniline	100-01-6	7.30E+02
4-Chloroaniline	106-47-8	5.30E+03	Nitrobenzene	98-95-3	1.90E+03
Chlorobenzene	108-90-7	4.66E+02	2-Nitrophenol	88-75-5	2.10E+03
Chloroethane	75-00-3	5.74E+03	4-Nitrophenol	100-07-7	1.60E+04
2-Chloroethyl vinyl ether	110-75-8	1.50E+04	Polychlorinated Biphenyl (Total)	1336-36-3	3.10E-02
Chloromethane	74-87-3	6.50E+03	Aroclor 1016	12674-11-2	4.20E-01
2-Chloronapthalene	91-58-7	6.74E+00	Aroclor 1232	11141-16-5	1.45E+00
2-Chlorophenol	95-57-8	2.90E+04	Aroclor 1221	11104-28-2	1.50E+01
4-Chlorophenylphenyl ether	7005-72-3	3.30E+00	Aroclor 1242	53469-21-9	2.40E-01
Chrysene	218-01-9	1.80E-03	Aroclor 1260	11096-82-5	2.70E-03
4,4'-DDD	72-54-8	1.00E-01	Aroclor 1248	12672-29-6	5.40E-02
4,4'-DDE	72-55-9	4.00E-02	Aroclor 1254	11097-69-1	1.20E-02
4,4'-DDT	50-29-3	5.00E-03	Pentachlorophenol	87-86-5	1.40E+01
Dibenz(a,h)anthracene	53-70-3	5.00E-04	Phenanthrene	85-01-8	1.00E+00
1,2-Dichlorobenzene	95-50-1	1.00E+02	Phenol	108-95-2	9.30E+04
1,3-Dichlorobenzene	541-73-1	1.23E+02	Pyrene	129-00-0	1.32E-01
1,4-Dichlorobenzene	106-46-7	7.90E+01	Styrene	100-42-5	3.00E+02
3,3'-Dichlorobenzidine	91-94-1	4.00E+00	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2.00E-04
1,1-Dichloroethane	75-34-3	5.50E+03	1,1,2,2-Tetrachloroethane	79-34-5	2.90E+03
1,2-Dichloroethane	107-06-2	8.52E+03	Tetrachloroethene	127-18-4	1.50E+02
1,1-Dichloroethene	75-35-4	2.25E+03	Toluene	108-88-3	5.35E+02
1,2-Dichloroethene (cis)	540-59-0	3.50E+03	o-Toluidine	119-93-7	7.35E+01
1,2-Dichloroethene (trans)	540-60-0	6.30E+03	Toxaphene	8001-35-2	5.00E-01
2,4-Dichlorophenol	120-83-2	4.60E+03	1,1,1-Trichloroethane	71-55-6	1.50E+03
1,2-Dichloropropane	78-87-5	2.70E+03	1,1,2-Trichloroethane	79-00-5	4.50E+03
1,3-Dichloropropene (cis and trans)	542-75-6	2.80E+03	1,2,4-Trichlorobenzene	120-82-1	3.00E+01
Dieldrin	60-57-1	1.95E-01	Trichloroethene	79-01-6	1.10E+03
Diethyl Phthalate	84-66-2	8.96E+02	2,4,5-Trichlorophenol	95-95-4	1.19E+03
2,4-Dimethylphenol	1300-71-6	4.20E+03	2,4,6-Trichlorophenol	88-06-2	8.00E+02
Dimethylphthalate	131-11-3	4.32E+03	Vinyl Acetate	108-05-4	2.00E+04
Di-n-butyl phthalate	84-74-2	1.30E+01	Vinyl Chloride	75-01-4	2.67E+03
Di-n-octyl phthalate	117-84-0	3.00E+00	Xylene (Mixed)	1330-20-7	1.98E+02
2,4-Dinitrophenol	51-28-5	5.60E+03	m-Xylene	108-38-3	1.30E+02
2,4-Dinitrotoluene	121-14-2	2.40E+02	o-Xylene	95-47-6	1.75E+02
2,6-Dinitrotoluene	606-20-2	1.32E+03	p-Xylene	106-42-3	1.98E+02

Reference: USEPA, 1990. Basics of Pump and Treat Ground Water Remediation Technology. EPA-600/8-90/003, Ada, Oklahoma.

TABLE 5  
SOIL WATER DISTRIBUTION COEFFICIENT (ml/g)

<u>Metal</u>	<u>CAS No.</u>	<u>Distribution Coefficient</u>	<u>Metal</u>	<u>CAS No.</u>	<u>Distribution Coefficient</u>
Antimony	7440-36-0	45	Selenium	7782-49-2	43
Arsenic	7440-38-2	29	Silver	7440-22-4	35
Beryllium	7440-41-7	250	Thallium	7440-28-0	3200
Cadmium	7440-43-9	162	Zinc	7440-66-6	40
Chromium (VI)	18540-29-9	8			
Copper	7440-50-8	22	<u>Radionuclide</u>	<u>CAS No.</u>	<u>Distribution Coefficient</u>
Lead	7439-92-1	270	Radium	7440-14-4	40
Mercury	7439-97-6	152	Thorium	7440-29-1	40
Nickel	7440-02-0	82	Uranium	7440-61-1	2.5

## References:

Allard, B., H. Kipatsi and J. Rydberg. 1977. Adsorption of long lived radionuclides in clay and bedrock. Part 1. Determination of distribution coefficients. KBS Technical Report 55.

Research Triangle Institute. 1992. Preliminary soil action level for Superfund Sites, draft interim report. Prepared for USEPA Hazardous Site Control Division, Arlington, VA. EPA Contract 68-W1-0021.

Sheppard, Marsha I. and Thibault, D.H. 1990. Default soil solid/liquid partition coefficients,  $K_d$ s, for four major soil types: a compendium. Health Physics Volume 50 No. 4.

TABLE 6  
HYDRAULIC CONDUCTIVITY VALUES FOR NEW  
JERSEY AQUIFERS AND GEOLOGICAL  
FORMATIONS (ft/day)

<u>Geologic Age</u> <u>Aquifer/Geologic Formation</u>	<u>Hydraulic</u> <u>Conductivity</u>
<u>Quaternary</u>	
Quaternary Undifferentiated	39.71
<u>Tertiary</u>	
Cohansey Formation	118.68
Kirkwood Formation	73.48
Kirkwood-Cohansey Aquifer System	102.23
Atlantic City 800-Foot Sand Aquifer	99.68
Rio Grande Water Bearing Zone	114.50
Piney Point Aquifer	65.68
Shark River Formation	54.90
Manasquan Formation*	0.008155
Vincentown Aquifer	15.10
Hornerstown Formation*	0.005882
<u>Cretaceous</u>	
Navesink Formation	0.060000
Mt. Laurel & Wenonah Formations	12.74
Mt. Laurel-Wenonah Aquifer	14.34
Wenonah Formation*	0.000050
Marshalltown Formation*	0.001744
Marshalltown-Wenonah Confining Unit*	0.001711
Englishtown Aquifer	19.06

<u>Geologic Age</u> <u>Aquifer/Geologic Formation</u>	<u>Hydraulic</u> <u>Conductivity</u>
Woodbury Formation*	0.000123
Merchantville Formation*	0.000024
Merchantville-Woodbury Confining Unit*	0.000084
Magothy Formation	79.23
Raritan Formation	144.32
Potomac Formation	163.1
Potomac-Raritan-Magothy Aquifer System	39.56
Lower Potomac-Raritan-Magothy Aquifer	110.93
Middle Potomac-Raritan-Magothy Aquifer	144.32
Upper Potomac-Raritan-Magothy Aquifer	79.98
<u>Jurassic</u>	
Passaic Formation	5.01
Brunswick Aquifer	4.24
<u>Triassic</u>	
Stockton Formation	3.50
<u>Cambrian-Ordovician</u>	
Martinsburg Formation	0.82
Allentown Dolomite	4.16
Kittatinny Supergroup	2.06
<u>Proterozoic</u>	
Pyroxene Granite	0.77
Proterozoic Era Undifferentiated	3.22

Reference: NJDEP, 1994. New Jersey Geologic Survey.

\* Vertical hydraulic conductivity data used for these formations because no horizontal conductivity data was available.

TABLE 7  
SEDIMENT SCREENING GUIDELINES (mg/kg, dry weight)

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Lowest effects level</u>	
		<u>Fresh Water</u>	<u>Effects range-low</u> <u>Estuarine/Marine</u>
Acenaphthene	83-32-9	0.016	0.016
Acenaphthylene	208-96-8	0.044	0.044
Aldrin	309-00-2	0.002	0.002
Anthracene	120-12-7	0.22	0.085
Arsenic	7740-38-2	6	8.2

Chemical Name	CAS No.	Lowest effects level	Effects range-low
		Fresh Water	Estuarine/Marine
Benzene	71-43-2	0.34	0.34
Benzo(a)anthracene	56-55-3	0.32	0.261
Benzo(k)fluoranthene	207-08-9	0.240	0.240
Benzo(g,h,i)perylene	191-24-2	0.17	0.17
Benzo(a)pyrene	50-32-8	0.37	0.43
Benzo hexachloride (BHC)		0.003	0.003
a-BHC	319-84-6	0.006	—
b-BHC	319-85-7	0.005	—
γ-BHC (Lindane)	58-89-9	0.003	—
Cadmium	7440-47-9	0.6	1.2
Chlordane	57-74-9	0.007	0.007
Chromium	7440-47-3	26	81
Chrysene	218-01-9	0.34	0.384
Copper	7440-50-8	16	34
op + pp-DDT		0.008	—
pp-DDD	72-54-8	0.008	—
pp-DDE	72-55-9	0.005	0.0022
DDT (Total)	50-29-3	0.007	0.0016
Dibenzo(a,h)anthracene	53-70-3	0.06	0.063
Dieldrin	60-57-1	0.002	0.002
Endrin	72-20-8	0.003	0.003
Ethylbenzene	100-41-4	1.4	1.4
Fluoranthene	206-44-0	0.75	0.60
Fluorene	86-73-7	0.19	0.019
Heptachlor epoxide	—	0.005	0.005
Hexachlorobenzene	118-74-1	0.020	0.020
Ideno(1,2,3-cd)pyrene	193-99-5	0.20	0.20
Lead	7439-92-1	31	47
Mercury	7439-97-6	0.2	0.15
2-Methylnaphthalene	91-57-6	0.07	0.07
Mirex	2385-85-5	0.007	0.007
Napthalene	91-20-3	0.16	0.16
Nickel	7440-02-0	16	21
PAH (Total)	—	4.0	4.0
PCB (Total)	1336-36-3	0.07	0.023
PCB Arochlor 1016	12674-11-2	0.007	—
PCB Arochlor 1248	12672-29-6	0.03	—
PCB Arochlor 1254	11097-69-1	0.06	—
PCB Arochlor 1260	11096-82-5	0.005	—
Phenanthrene	85-01-8	0.56	0.240
Pyrene	129-00-0	0.49	0.665
Silver	7440-22-4	1.0	1.0
Tetrachloroethylene	127-18-4	0.45	0.45
Toluene	108-88-3	2.5	2.5
Trichloroethylene	79-01-6	1.6	1.6
Xylene	1330-20-7	>0.12	>0.12
Zinc	7440-66-6	120	150

Reference: New Jersey Department of Environmental Protection, Guidance for Sediment Quality Evaluations, November 1998

TABLE 8  
SURFACE WATER FLOW  
(cubic feet per second)

Water Body—Location	Annual Mean Flow, Calendar Days	Water Body—Location	Annual Mean Flow, Calendar Days
Assunpink Creek—Trenton	129	Delaware River—Port Jervis	3,599
Bass River, East Branch—New Gretna	16.5	Delaware River—Trenton	8,574
Batsto River—Batsto	134	Elizabeth River—Elizabeth	24
Cooper River—Haddonfield	20.1	Flat Brook—Flatbrookville	88.1
Crosswicks Creek—Extonville	104	Great Egg Harbor River—Folsom	78.7
Delaware & Raritan Canal—Port Mercer	133	Green Brook—Seeley Mills	9.09
Delaware River—Belvidere	5,735	Green Pond Brook—Picatinny Arsenal	8.98
Delaware River—Montague	4,064	Green Pond Brook—Wharton	17.2
		Hackensack River—Riverdale	80.2
		Hackensack River—West Nyach	40.8
		Hackensack River—Westwood	46.1
		Hohokus Brook—Hohokus	35.5
		Holland Brook—Readington	11.2

Water Body—Location	Annual Mean Flow, Calendar Days	Water Body—Location	Annual Mean Flow, Calendar Days
Jumping Brook—Neptune City	8.04	Rahway River—Springfield	31.4
Lamington (Black) River—Pottersville	46.9	Ramapo River—Mahwah	176
Lawrence Brook—Westons Mill	42.4	Ramapo River—Pompton Lakes	219
Little Ease Run—Clayton	9.7	Ramapo River—Suffern	127
Mahwah River—N Suffern	16.8	Rancocas Creek, North Branch—Pemberton	158
Manalapan Brook—Spotswood	54.1	Raritan River—Bound Brook	933
Manasquan River—Allenwood	73.5	Raritan River—Raritan	276
Manasquan River—Squankum	59.1	Raritan River, North Branch—Far Hills	39.5
Maurice River—Norma	146	Raritan River, South Branch—Highbridge	103
McDonalds Branch—Lebanon St. Forest	1.95	Raritan River, South Branch—Manville	673
Metedeconk, North Branch—Lakewood	50.6	Ringwood Creek—Wanaque	24.3
Middlebrook, West Branch—Martinsville	3.73	Robinsons Branch—Rahway	27.3
Millstone River—Blackwell Mills	331	Rockaway River—Berkshire Valley	40.8
Mullica River—near Batsto	101	Rockaway River—above Boonton Reservoir	168
Musconetcong River—Bloomsbury	196	Rockaway River—below Boonton Reservoir	106
Neshanic River—Reaville	30.7	Saddle River—Lodi	99.9
Neversink River—Godeffroy	317	Saddle River—Ridgewood	27.2
Oswego River—Harrisville	83.8	Shark River—Neptune City	12.6
Pascack Brook—West Wood	46.1	Shrewsbury River—Red Bank	73.9
Passaic River—Chatham	150	Stony Brook—Princeton	51.1
Passaic River—Little Falls	771	Stony Brook—Watchung	8.23
Passaic River—Millington	80.9	Swimming River—Red Bank	32.1
Passaic River—Pine Brook	530	Third River—Passaic	18.6
Paulins Kill—Blairstown	146	Toms River—Toms River	178
Peters Brook—Raritan	4.43	Wading River, West Branch—Jenkins	146
Pennsauken Creek, South Branch—Cherry Hill	13.6	Wanaque River—Awosting	39.6
Pompton River—Pompton Plains	369	Whippany River—Morristown	53.4
Raccoon Creek—Swedesboro	35.1		
Rahway River—Rahway	51.3		

Reference: U.S. Geological Survey, 1993. Water Resources Data, New Jersey, Water Year 1992, U.S. Geological Survey Water Data Report. NJ-92-1

TABLE 9  
INHALATION TOXICITY AND VAPOR PRESSURE (mm/mercury)

Chemical Name	CAS No.	Toxicity Level Category	Vapor Pressure
Acetaldehyde	75-07-0	2	748.0
Acetone cyanohydrin	75-86-5	1	0.8
Acetonitrile	75-05-8	1	74.0
Acetophenone	98-86-2	2	1.0
Acrolein	107-02-8	2	210.0
Acrylamide	79-06-1	3	2.0
Acrylic acid	79-10-7	2	3.2
Acrylonitrile	107-13-1	2	137.0
Aldrin	309-00-2	3	0.00023
Allyl chloride	107-05-1	1	340.0
Aniline	62-53-3	1	1.0
Aramite	140-57-8	2	—
Arsenic (inorganic)	7440-38-2	3	1.0
Asbestos	1332-21-4	3	—
Azobenzene	103-33-3	2	1.0
Barium	7440-39-3	2	10.0
Benzene	71-43-2	2	95.0
Benzidine	92-87-5	3	—
Benzo(a)pyrene	50-32-8	3	0.00000005
Benzyl chloride	100-44-7	2	1.0
Beryllium	7440-41-7	3	—
BHC (gamma) (Lindane)	58-89-9	3	0.000094
Bis(2-chloroethyl)ether	111-44-4	3	0.71
Bis(2-chloroisopropyl)ether	108-60-1	2	0.10
Bis(chloromethyl)ether	542-88-1	3	30.0
Boron	7440-42-8	1	—
Boron trifluoride	7637-07-2	2	—
Bromoethene	593-60-2	2	—
Bromoform	75-25-2	2	5.6

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Toxicity Level Category</u>	<u>Vapor Pressure</u>
Bromomethane	74-83-9	1	1,420.0
1,3-Butadiene	106-99-0	3	1,520.0
Cadmium	7440-43-9	3	1.0
Carbon disulfide	75-15-0	1	298.0
Carbon tetrachloride	56-23-5	2	113.0
Chlordane	57-74-9	3	0.00001
Chlorine dioxide	10049-04-4	2	—
2-Chloroacetophenone	532-27-4	2	—
Chlorobenzene	108-90-7	1	11.8
Chlorobenzilate	510-15-6	2	0.000022
2-Chloro-1,3-butadiene	126-99-8	1	200.0
Chlorodifluoromethane (HCFC-22)	74-45-6	1	—
Chloroform	67-66-3	2	160.0
Chloromethane	74-87-3	2	3,800.0
Chloroprene	126-99-8	1	200.0
2-Chloropropane	75-29-6	1	—
Chromium VI	—	3	—
Chromium (total)	7440-47-3	3	1.0
Chrysene	218-01-9	—	0.000000063
Copper	7440-50-8	2	1.0
Cumene	98-82-8	1	3.2
4'4'-DDT	50-29-3	2	0.0000015
1,2-Dibromo-3-chloropropane	96-12-8	2	0.8
1,2-Dibromoethane	106-93-4	3	12.0
Dibutylnitrosamine	924-16-3	3	—
1,2-Dichlorobenzene	95-50-1	1	1.5
1,4-Dichlorobenzene	106-46-7	1	1.8
3,3'-Dichlorobenzidine	91-94-1	3	—
1,4-Dichloro-2-butene	764-41-0	3	—
Dichlorodifluoromethane (Freon 12)	75-71-8	1	4,250.0
1,1-Dichloroethane	75-34-3	1	234.0
1,2-Dichloroethane	107-06-2	2	79.0
1,1-Dichloroethene	75-35-4	2	591.0
Dichloroethyl ether	111-44-4	3	0.71
1,2-Dichloropropane	78-87-5	1	42.0
1,3-Dichloropropene	542-75-6	2	43.0
Dicyclopentadiene	77-73-6	2	10.0
Dieldrin	60-57-1	3	0.0000018
Diesel Fuel	—	—	<1.0
Diethanolamine	111-42-2	1	—
Diethylene glycol monobutyl ether	112-34-5	1	0.02
Diethylnitrosamine	55-18-5	3	—
N,N-Dimethylformamide	68-12-2	1	2.7
1,1-Dimethylhydrazine	57-14-7	3	157.0
1,2-Dimethylhydrazine	540-73-8	3	54.0
Dimethylnitrosamine	62-75-9	3	8.0
2,4-Dinitrotoluene	121-14-2	2	0.0013
N-Dioctylphthalate	117-84-0	1	0.2
1,4-Dioxane	123-91-1	2	37.0
Dioxin	—	3	—
1,2-Diphenylhydrazine	122-66-7	3	—
Epichlorohydrin	106-89-8	2	12.0
1,2-Epoxybutane	106-88-7	1	—
2-Ethoxyethanol	110-80-5	1	3.8
Ethyl acrylate	140-88-5	1	29.3
Ethylbenzene	100-41-4	1	10.0
Ethyl chloride	75-00-3	1	2,660.0
Ethylene	74-85-1	2	—
Ethylene bromide	106-93-4	3	12.0
Ethylene chloride	107-06-2	2	79.0
Ethylene dibromide	106-93-4	3	12.0
Ethylene dichloride	107-06-2	2	79.0
Ethylene glycol monobutyl ether	111-76-2	1	—
Ethylene oxide	75-21-8	2	1,095.0

Chemical Name	CAS No.	Toxicity Level Category	Vapor Pressure
Ethylidene dichloride	75-34-3	1	234.0
Formaldehyde	50-00-0	2	—
Fuel Oil #2, #4, #6	—	—	<1.0
Furfural	98-01-1	1	1.0
Gasoline	8006-61-9	1	76.8
Glycidaldehyde	765-34-4	1	—
Heptachlor	76-44-8	3	0.0003
Heptachlor epoxide	1024-57-3	3	—
Hexachlorobenzene	118-74-1	3	1.0
Hexachlorobutadiene	87-68-3	2	0.15
alpha-Hexachlorocyclohexane	319-84-6	3	0.06
beta-Hexachlorocyclohexane	319-85-7	3	0.17
Hexachlorocyclopentadiene	77-47-4	2	0.08
Hexachloroethane	67-72-1	2	0.40
N-Hexane	110-54-3	1	120.0
Hydrazine	302-01-2	3	16.0
Hydrazine sulfate	10034-93-2	3	—
Hydrochloric acid	7647-01-0	1	3,040.0
Hydrogen chloride	7647-01-0	1	3,040.0
Hydrogen sulfide	7783-06-4	2	1,520.0
4,4-Isopropylidenediphenol	80-05-7	2	—
Lead	7439-92-1	2	1.0
Lubricating/hydraulic oils	—	—	<1
Manganese	7439-96-5	2	1.0
Melamine	108-78-1	1	50.0
Mercury (inorganic)	7439-97-6	2	0.012
Methacrylonitrile	126-98-7	2	65.0
Methane	—	—	>1
2-Methoxyethanol	109-86-4	1	—
Methyl bromide	74-83-9	1	1,420.0
Methyl chloride	74-87-3	2	3,800.0
Methyl chloroform	71-55-6	1	100.0
Methylcyclohexane	108-87-2	1	40.0
4,4'-Methylene bis(2-chloroaniline)	101-14-4	2	—
Methylene chloride	75-09-2	1	429.0
4,4-Methylenedianiline	101-77-9	2	—
Methylene dichloride	75-09-2	1	429.0
Methylene diphenyl diisocyanate	101-68-8	2	—
4,4'-Methylenediphenyl isocyanate	101-68-8	2	—
Methyl ethyl ketone	78-93-3	1	100.0
Methyl isobutyl ketone	108-10-1	1	10.0
Methyl styrene (mixed isomers)	25013-15-4	1	—
Methyl tert butyl ether	1634-04-4	1	245.0
Nickel subsulfide	12035-72-2	3	—
Nickel (refinery dust)	7440-02-0	3	1.0
o-Nitroaniline	88-74-4	2	0.1
Nitrobenzene	98-95-3	1	0.15
2-Nitropropane	79-46-9	3	10.0
N-Nitrosodiethylamine	55-18-5	3	—
N-Nitrosodimethylamine	62-75-9	3	8.0
N-Nitrosodi-n-butylamine	924-16-3	3	—
N-Nitrosodiphenylamine	86-30-6	2	0.1
N-Nitrosomorpholine	59-89-2	2	—
N-Nitroso-n-ethylurea	759-73-9	3	—
N-Nitroso-n-methylurea	684-93-5	3	—
N-Nitrosopyrrolidine	930-55-2	3	—
Pentachlorophenol	87-86-5	1	0.0011
Phosphine	7803-51-2	2	—
Phthalic anhydride	85-44-9	1	0.0002
Polychlorinated biphenyl (PCB)	1336-36-3	3	0.00077
Polycyclic aromatic hydrocarbons (PAHs)	—	3	—
Propylene chloride	78-87-5	1	42.0
Propylene dichloride	78-87-5	1	42.0
Propylene glycol	57-55-6	1	—

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Toxicity Level Category</u>	<u>Vapor Pressure</u>
Propylene glycol monomethyl ether	107-98-2	1	—
Propylene oxide	75-56-9	2	—
Styrene	100-42-5	1	5.0
Sulfuric acid	7664-93-9	1	1.0
Terephthalic acid	100-21-0	1	—
2,3,7,8-Tetrachlorodibenzo(p)dioxin	1746-01-6	3	0.0000000074
1,1,1,2-Tetrachloroethane	630-20-6	2	10.0
1,1,2,2-Tetrachloroethane	79-34-5	2	4.0
Tetrachloroethylene	127-18-4	2	19.0
Toluene	108-88-3	1	28.0
Toxaphene	8001-35-2	3	0.4
1,2,4-Trichlorobenzene	120-82-1	1	1.0
1,1,1-Trichloroethane	71-55-6	1	100.0
1,1,2-Trichloroethane	79-00-5	2	25.0
Trichloroethylene	79-01-6	2	77.0
Trichlorofluoromethane (Freon 11)	75-69-4	1	687.0
2,4,6-Trichlorophenol	88-06-2	2	1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	273.0
Triethylamine	121-44-8	1	50.0
Vinyl acetate	108-05-4	1	100.0
Vinyl bromide	593-60-2	2	—
Vinyl chloride	75-01-4	2	2,580.0
Vinylidene chloride	75-35-4	2	591.0
m-Xylene	108-38-3	1	6.0
o-Xylene	95-47-6	1	5.0
p-Xylene	106-42-3	1	6.5
Xylenes (mixed)	1330-20-7	1	6.0
Zinc/zinc oxide	7446-66-6	2	1.0

Key:

- 1 = slight toxicity
- 2 = moderate toxicity
- 3 = severe toxicity

Reference:

NJDEP. 1994. Air Quality Regulation Program, Bureau of Air Quality Evaluation, Unit Risk Factors for Inhalation.  
 NJDEP. 1994. Air Quality Regulation Program, Bureau of Air Quality Evaluation, Reference Concentrations for Inhalation.

Amended by R.2000 d.381, effective September 18, 2000.  
 See: 32 N.J.R. 932(a), 32 N.J.R. 3394(b).  
 Rewrote the appendix.